

REMARKS/ARGUMENTS

In this Amendment Under 37 C.F.R. § 1.111 ("Fifth Amend"), Applicants amend claim 28 in order to better define the claimed invention. No new matter is introduced.

Prior to entry of the Fifth Amend, claims 22-41 were pending in the application. After entry of the Fifth Amend, claims 22-41 remain pending in the application.

In the Fifth OA, the Examiner appeared to object to the drawings under 37 C.F.R. § 1.83(a); reject claims 22, 23, 36, and 37¹ under 35 U.S.C. § 112, ¶ 1 (written description); reject claim 28 under 35 U.S.C. § 112, ¶ 1 (enablement); reject claims 22-27, 29, 30, and 35-41² under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 3,838,752 to Berkovitz ("Berkovitz I")³ in view of U.S. Patent No. 5,429,211 to Aulanko et al. ("Aulanko I")⁴, U.S. Patent No. 5,975,826 to Scholder ("Scholder"), and U.S. Patent No. 4,158,283 to Nation ("Nation"); and reject claims 31-34 under 35 U.S.C. § 103(a) as being unpatentable over Berkovitz I in view of Aulanko I, Scholder, and Nation, and further in view of World Intellectual Property

¹ Page 3, § 4, of the Fifth OA indicates that claims 22, 23, 28, 36, and 37 are rejected under 35 U.S.C. § 112, ¶ 1 (written description). However, no support appears to be provided regarding such a written-description rejection for claim 28.

² Page 4, § 10, of the Fifth OA indicates that claims 22-30 and 35-41 are rejected under 35 U.S.C. § 103(a). However, no support appears to be provided regarding such a rejection for claim 28.

³ Labeled as Berkovitz I in order to distinguish it from previously cited U.S. Patent No. 4,030,569 to Berkovitz ("Berkovitz II").

⁴ Labeled as Aulanko I in order to distinguish it from previously cited U.S. Patent No. 5,665,944 to Aulanko et al. ("Aulanko II").

Organization International Publication No. WO 99/43595 to Hollowell et al.
("Hollowell").

Incorporation of Previous Arguments by Reference

In addition to the arguments presented below, Applicants specifically incorporate by reference the arguments made in the Amendment Under 37 C.F.R. § 1.111 ("First Amend") filed on January 3, 2006; the Amendment After Final Under 37 C.F.R. § 1.116 ("First AAF") filed on November 1, 2006; the Amendment Under 37 C.F.R. § 1.111 ("Second Amend") filed on July 16, 2007; the Amendment Under 37 C.F.R. § 1.111 ("Third Amend") filed on April 22, 2008; the Amendment Under 37 C.F.R. § 1.111 ("Fourth Amend") filed on November 28, 2008; and the Amendment Under 37 C.F.R. § 1.114 ("First Rule 114 Amend") filed on July 24, 2009.

Rejection Under 35 U.S.C. § 112, ¶ 1—Claim 28

Applicants amend claim 28 to recite, inter alia, "wherein the drive sheave and the counter sheave are arranged horizontally with respect to each other, or wherein the drive sheave and the counter sheave are arranged vertically with respect to each other". Applicants submit that this amendment obviates the rejection of claim 28 under 35 U.S.C. § 112, ¶ 1, and request that the associated rejection be withdrawn.

Objection to the Drawings

As discussed above, Applicants amend claim 28 to recite, inter alia, "wherein the drive sheave and the counter sheave are arranged horizontally

with respect to each other, or wherein the drive sheave and the counter sheave are arranged vertically with respect to each other". Applicants submit that this amendment obviates the objection to the drawings under 37 C.F.R. § 1.83(a), and request that the associated objection be withdrawn.

Rejection Under 35 U.S.C. § 112, ¶ 1—Claims 22, 23, 36, and 37

Applicants note that claims 22 and 37 recite, inter alia, "wherein a ratio of a diameter of the drive sheave to a nominal diameter of each cable of the plurality of carrier cables is greater than or equal to 30:1 and less than or equal to 40:1"; claim 23 recites, inter alia, "wherein the ratio of the diameter of the drive sheave to the nominal diameter of each cable of the plurality of carrier cables is substantially 34:1"; and claim 36 recites, inter alia, "wherein a ratio of a diameter of the drive sheave to a nominal diameter of each cable of the plurality of carrier cables is substantially 30:1". Applicants submit that the as-filed disclosure supports these recitations at least as follows.

First, p. 4/ll. 21-24 of the as-filed specification states, inter alia, "[i]nstead of two or three extremely thin flat cable trains, in the elevator in accordance with the present invention always equally thin carrier cables are used, wherein the ratio of the drive sheave diameter to the nominal diameter of the carrier cables is ≤ 40 " (emphasis added). At least this statement supports the recitation "wherein a ratio of a diameter of the drive sheave to a nominal diameter of each cable of the plurality of carrier cables is . . . less than or equal to 40:1".

Second, p. 4/ll. 24-25 of the as-filed specification states, inter alia, “[a] ratio of essentially 30 therein turned out to be very advantageous” (emphasis added). At least this statement supports the recitation “wherein a ratio of a diameter of the drive sheave to a nominal diameter of each cable of the plurality of carrier cables is substantially 30:1”.

Third, claim 2 of the as-filed specification states, inter alia, “characterized in that the ratio of drive sheave diameter to nominal diameter of said carrier cables essentially is 30” (emphasis added). At least this statement also supports the recitation “wherein a ratio of a diameter of the drive sheave to a nominal diameter of each cable of the plurality of carrier cables is substantially 30:1”.

Fourth, claim 6 of the as-filed specification states, inter alia, “the ratio of drive sheave diameter to nominal diameter of said carrier cables preferably being about 34” (emphasis added). At least this statement also supports the recitation “wherein the ratio of the diameter of the drive sheave to the nominal diameter of each cable of the plurality of carrier cables is substantially 34:1”.

Fifth, Applicants submit that because the as-filed specification supports at least “less than or equal to 40:1”, “substantially 30:1”, and “substantially 34:1”, the as-filed specification also supports “greater than or equal to 30:1 and less than or equal to 40:1”.

Sixth, Applicants note that in the First Rule 114 Amend, Applicants amended the paragraph at p. 7/ll. 13-25 of the specification to recite, inter

alia, “[t]he ratio of the diameter of the drive sheave to the nominal diameter of each cable of the plurality of carrier cables may be, for example, 30:1, substantially 30:1, substantially 34:1, 40:1, less than or equal to 40:1, or greater than or equal to 30:1 and less than or equal to 40:1”.

Applicants submit that this discussion obviates the rejection of claims 22, 23, 36, and 37 under 35 U.S.C. § 112, ¶ 1, and request that the associated rejection be withdrawn.

In re Rice

The Fifth OA’s argument regarding In re Rice, 144 USPQ 476 (CCPA 1965) (copy attached) appears to rely on a case not cited in the MPEP, as shown by the attached copy of page A-38. In addition, Applicants submit that, as discussed below, the differences between the prior art and the recitation “wherein each cable of the plurality of carrier cables has a nominal diameter greater than 5 mm and less than 7 mm” are not minor and, thus, are not a simple matter of design choice. For at least these reasons, Applicants submit that the Fifth OA’s reliance on In re Rice is misplaced.

In re Woodruff

As discussed below, Applicants submit that the Safety Code for Elevators and Escalators A17.1 (issued by the American Society of Mechanical Engineers), paragraph 2.20.4, requires a minimum diameter of 9.5 mm for hoisting and counterweight ropes. Applicants also submit that a person having ordinary skill in the art (“PHOSITA”) generally is not motivated to

intentionally violate safety codes set up by standard-setting organizations in their field. Additionally, Applicants submit this is evidence that “wherein each cable of the plurality of carrier cables has a nominal diameter greater than 5 mm and less than 7 mm” achieves unexpected results. For at least these reasons, Applicants submit that the Fifth OA’s reliance on In re Woodruff, 16 USPQ2d 1934 (Fed. Cir. 1990) is misplaced.

Section 103(a) Rejection—Berkowitz I/Aulanko I/Scholder/Nation

Applicants submit that the Fifth OA fails to establish a proper prima facie case of obviousness under 35 U.S.C. § 103(a) for independent claims 22, 36, and 37, for at least the following reasons.

First, Applicants concur with the Fifth OA’s admissions that Berkowitz I does not disclose at least “an elevator without machine room”, “cage guide rails”, “counterweight guide rails”, “wherein the cage is guided by the cage guide rails”, “wherein the counterweight is guided by the counterweight guide rails”, “wherein each cable of the plurality of carrier cables has a nominal diameter greater than 5 mm and less than 7 mm”, “wherein the undercut portions have a width greater than 1 mm and less than 3 mm”, and “wherein a ratio of a diameter of the drive sheave to a nominal diameter of each cable of the plurality of carrier cables is greater than or equal to 30:1 and less than or equal to 40:1”.

Second, the Fifth OA’s purported argument appears to gloss over the differences between the prior art in Berkowitz I and the invention of

Berkowitz I. FIGs. 3A, 6A, 6B, and 9A refer to the prior art of Berkowitz I, while FIGs. 3B, 7A, 7B, and 9B refer to the invention of Berkowitz I.

Applicants submit that the ratio of 0.375—referred to, for example, at c. 5/l. 4 of Berkowitz I and p. 6, § 23, of the Fifth OA—refers to the invention of Berkowitz I, not the prior art of Berkowitz I—which has a much larger ratio.

Third, Applicants submit that Scholder is not analogous art to the present application. Scholder is entitled “Hand-Truck With Attachments”. In contrast, Berkowitz I is entitled “Elevator System”, Aulanko I is entitled “Traction Sheave Elevator”, and Nation is entitled “Cable Stress and Fatigue Control”. Also, as shown on their cover pages, Aulanko I, Berkowitz I, and Nation are U.S. Classification 57/XXX or 187/XXX, while the U.S. Classification of Scholder is 414/444. Applicants submit that this demonstrates not only that Scholder is not analogous art, but that the Examiner was unable to find any reference in at least U.S. Classification 57/XXX or 187/XXX that even arguably disclosed “wherein each cable of the plurality of carrier cables has a nominal diameter greater than 5 mm and less than 7 mm”.

Applicants also submit that the OR Classification (414/444) of Scholder is significantly different than the OR Classification of Aulanko I (57/217), Berkowitz I (187/256), and Nation (57/200). Additionally, Applicants submit that the XR Classifications of Scholder are significantly different than the XR Classifications of Aulanko I, Berkowitz I, and Nation. In fact, there is no

common U.S. Patent Classification System ("USPC") OR or XR Classification between Scholder and any of Aulanko I, Berkowitz I, and Nation.

Moreover, Applicants submit that the Fields of Search for Scholder are significantly different than the Fields of Search for Aulanko I, Berkowitz I, and Nation. In fact, there is no common Field of Search between Scholder and any of Aulanko I, Berkowitz I, and Nation.

Fourth, Applicants submit that Scholder is not reasonably pertinent to the particular problem with which the present invention is concerned. For example, the cables of Scholder have the dimensions listed because they are suitable for hand-trucks (e.g., the title of Scholder is "Hand-Truck With Attachments").

Fifth, Applicants submit that Scholder effectively teaches away from use in elevator applications (as opposed to hand-truck applications). The recitation "wherein each cable of the plurality of carrier cables has a nominal diameter greater than 5 mm and less than 7 mm" is contrary to what a PHOSITA typically would use. That is, ropes used in an elevator generally require a minimum wire thickness. For example, the Safety Code for Elevator and Escalators A17.1 paragraph 2.20.4 (issued by the American Society of Mechanical Engineers) requires a minimum diameter of 9.5 mm for hoisting and counterweight ropes. In contrast, the cables disclosed in Scholder are approximately 5 mm in diameter (Scholder, c. 5/11. 56-57).

Sixth, Nation effectively teaches away from steel cables in favor of titanium cables and/or aluminum cables. Nation, Abstract and Background of the Invention. For example, Applicants submit that cited language in the Fifth OA (e.g., p. 7, § 34) is referring to advantages of titanium cables.

For all of these reasons, Applicants submit that independent claims 22, 36, and 37 are patentable under 35 U.S.C. § 103(a) over any proper combination of Aulanko I, Berkowitz I, Nation, and/or Scholder. Applicants further submit that dependent claims 23-27, 29, 30, 35, and 38-41 are patentable under 35 U.S.C. § 103(a) over any proper combination of Aulanko I, Berkowitz I, Nation, and/or Scholder, for at least the same reasons as claims 22 and 37, from which claims 23-27, 29, 30, 35, and 38-41 directly or indirectly depend.

Section 103(a) Rejection— Berkowitz I/Aulanko I/Scholder/Nation/Hollowell

Applicants submit that the Fifth OA does not argue that Hollowell overcomes the deficiencies of Aulanko I, Berkowitz I, Nation, and Scholder discussed above. Therefore, Applicants submit that dependent claims 31-34 are patentable under 35 U.S.C. § 103(a) over any proper combination of Aulanko I, Berkowitz I, Hollowell, Nation, and/or Scholder, for at least the same reasons as claim 22, from which claims 31-34 directly or indirectly depend.

Request for Reconsideration and Allowance

Accordingly, in view of the above amendments and remarks,

reconsideration of the rejections and allowance of each of claims 22-41 in connection with the present application is earnestly solicited.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact the undersigned at the telephone number listed below.

If necessary, the Director of the U.S. Patent and Trademark Office is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 08-0750 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; in particular, extension of time fees.

Respectfully submitted,

HARNESS, DICKY, & PIERCE, P.L.C.

By _____

John A. Castellano, Reg. No. 35,094
P.O. Box 8910
Reston, VA 20195
703.668.8000

JAC/LFG:vrj

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MANUAL OF PATENT EXAMINING PROCEDURE

Rasmussen, In re, 650 F.2d 1212, 211 USPQ 323 (CCPA 1981) . . . 706.03(o), 1504.04, 2163, 2163.01, 2163.04, 2163.05, 2163.06	Remark, Ex parte, 15 USPQ2d 1498 (Bd. Pat. App. & Inter. 1990) . . . 716.03, 716.03(b), 2144.08
Ratny, In re, 24 USPQ2d 1713 (Comm'r Pat. 1992) 323	Remington, Ex parte, 1905 C.D. 28, 114 O.G. 694 (Comm'r Pat. 1904) 1503.01
Ratti, In re, 270 F.2d 810, 123 USPQ 349 (CCPA 1959). 2143.01	Renishaw PLC v. Marposs Societa' per Azioni, 158 F.3d 1243, 48 USPQ2d 1117 (Fed. Cir. 1998). 804
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RCA Corp. v. Data Gen. Corp., 887 F.2d 1056, 12 USPQ2d 1449 (Fed. Cir. 1989) . . 2133.03, 2133.03(b), 2133.03(e)(3)	Rey-Bellet v. Engelhardt, 493 F.2d 1380, 181 USPQ 453 (CCPA 1974) . . . 2107.02, 2138.05
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Rebstock v. Flouret, 191 USPQ 342 (Bd. Pat. Inter. 1975). 2138.06	Richardson, Ex Parte, 1906 Dec. Comm'r Pat. 83 (1905) 711.03(c)
Reckitt & Colman Products Ltd., In re, 230 USPQ 369 (Comm'r Pat. & Tm. 1986) 2755.01	Richardson v. Suzuki Motor Co., 868 F.2d 1226, 9 USPQ2d 1913 (Fed. Cir. 1989) 2131
Recreative Technologies, In re, 83 F.3d 1394, 38 USPQ2d 1776 (Fed. Cir. 1996) 2242, 2246, 2642, 2646	Richardson-Vicks, Inc. v. The Upjohn Co., 122 F.3d 1476, 44 USPQ2d 1181 (Fed. Cir. 1997) 716.01(d)
Red Cross Mfg. v. Toro Sales Co., 525 F.2d 1135, 188 USPQ 241 (7th Cir. 1975). 2133.03(e)(1)	Richman, In re, 409 F.2d 269, 161 USPQ 359 (CCPA 1969) 1412.02
Reed v. Quigg, 110 F.R.D. 363, 230 USPQ 2 (D.D.C. 1986) 2279	Riegger v. Beierl, 1910 C.D. 12, 150 O.G. 826 (Comm'r Pat. 1910) 604.06
Reeves Bros., Inc. v. U.S. Laminating Corp., 282 F. Supp. 118, 157 USPQ 235 (E.D. N.Y. 1968) 901.05	Rieser v. Williams, 225 F.2d 419, 118 USPQ 96 (CCPA 1958) 2138.06, 2307
Refac Int'l Ltd. v. Lotus Development Corp., 81 F.3d 1576, 38 USPQ2d 1665 (Fed. Cir. 1996). 410	Rijckaert, In re, 9 F.3d 1531, 28 USPQ2d 1955 (Fed. Cir. 1993) 2112, 2141.02, 2144.08
Regents of the University of California v. Eli Lilly & Co., 119 F.3d 1559, 43 USPQ2d 1398 (Fed. Cir. 1997) . . 2106, 2111.03, 2163, 2163.02, 2163.03	Rinehart, Ex parte, 10 USPQ2d 1719 (Bd. Pat. App. & Inter. 1985) 2404.01
Reid, In re, 179 F.2d 998, 84 USPQ 478 (CCPA 1950). 716.07	Rinehart, In re, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976) 2107.02, 2142, 2143.02, 2144.04
Rekers, In re, 203 USPQ 1034 (Comm'r Pat. 1979) 804.03	Riverwood Int'l Corp. v. R.A. Jones & Co., 324 F.3d 1346, 66 USPQ2d 1331 (Fed. Cir. 2003) 706.02, 2129, 2141.01
	Robbins Co. v. Lawrence Mfg. Co., 482 F.2d 426, 178 USPQ 577 (9th Cir. 1973) 2133.03(d), 2133.03(e)(1), 2133.03(e)(4)
	Roberts, In re, 470 F.2d 1399, 176 USPQ 313 (CCPA 1973) 2181

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Court of Customs and Patent Appeals

In re RICE AND WILSON

Appl. No. 7253 Decided Feb. 18, 1965

PATENTS

1. Pleading and practice in Patent Office—Rejections (§ 54.7)

Words and phrases (§ 70.)

Since differences in claimed structure and that of references are readily apparent, court takes "unpatentable over" (in examiner's rejection) as meaning obvious within meaning of 35 U.S.C. 103.

Particular patents—Air Cleaner

Rice and Wilson, Air Cleaner, claims 1 to 3 of application refused.

Appeal from Board of Appeals of the Patent Office.

Application for patent of Frank A. Rice and Elias W. Wilson, Serial No. 816,556, filed May 28, 1959; Patent Office Group 180. From decision rejecting claims 1 to 3, applicants appeal. Affirmed.

WILLIAM T. SEVALD, Royal Oak, Mich., for appellants.

CLARENCE W. MOORE (JERE W. SEARS of counsel) for Commissioner of Patents.

Before WORLEY, Chief Judge, and RICH, MARTIN, SMITH, and ALMOND, Associate Judges.

MARTIN, Judge.

The question the court must answer in this appeal is whether appellants' novel air cleaner, as represented by claims 1, 2 and 3 of their application serial No. 816,556 entitled "Air Cleaner" filed on May 28, 1959, is an obvious variation of the devices of the prior art. No claims stand allowed in the application, which is stated to be a continuation in part of application serial No. 698,474 filed November 25, 1957 for an "air cleaner device."

The centrifugal air cleaner appellants disclose is useful on internal combustion engines or air-compressors, particularly under very dusty conditions. The air cleaner is of simple construction and is "self cleaning" in operation. Reference to the accompanying figures of the application will aid in an understanding of the structure and operation of the device:

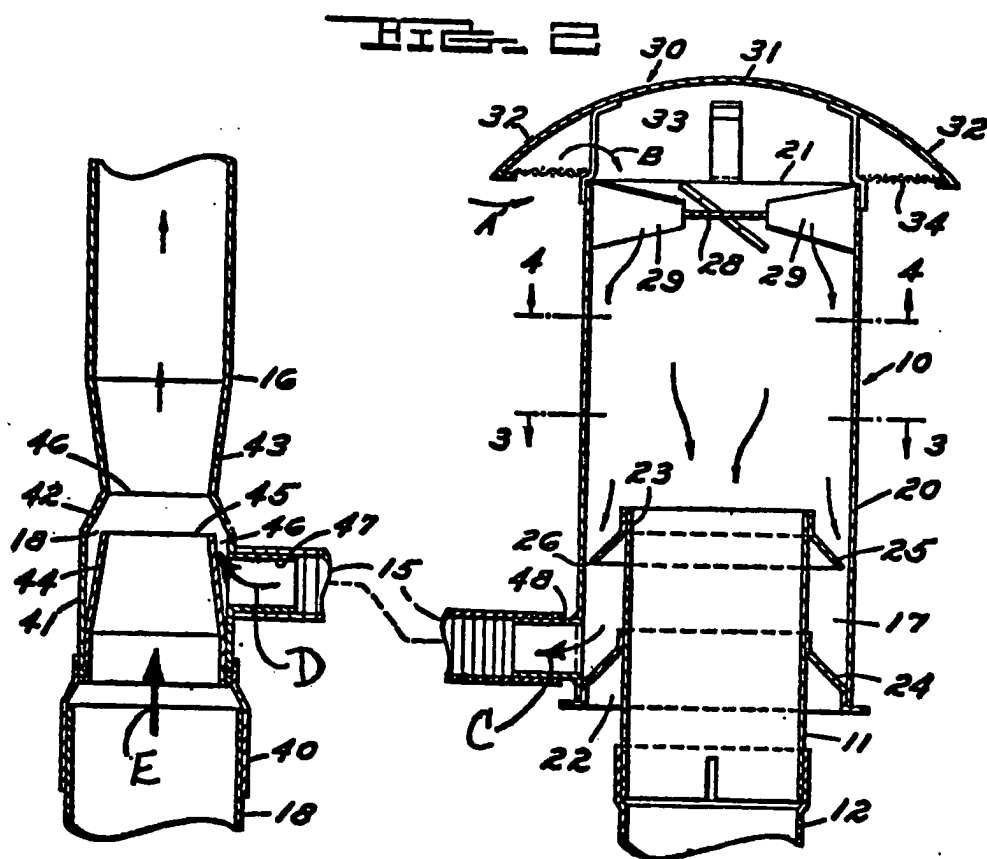
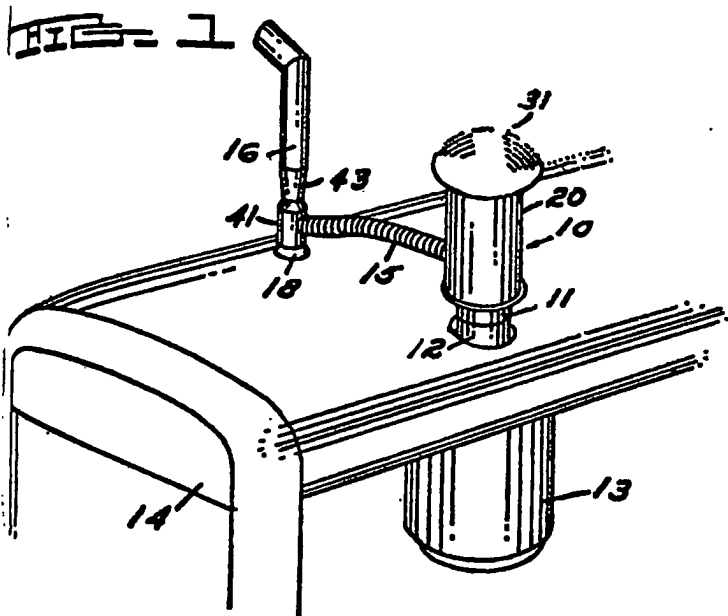


Figure 1 shows the air cleaner consisting of separation portion 10 mounted on the air intake of an internal combustion engine such as that of a tractor, with a hose 15 connected to a vacuum developing portion or venturi 16 mounted on the engine exhaust. Cross section views of those two portions of the device are seen on the right and left of Figure 2. In operation, when the engine is running, air is drawn into the cleaner via cap 30 following the path indicated by arrows A and B. The air flows over inclined vanes 29 which impart a "spiral swirling motion" to it. As the air is drawn downward in its spinning path, entrained dirt is centrifugally thrown toward the outer wall 20 of the "tank" or can-shaped separator portion of the air cleaner. The dirt and some air enters collecting chamber 17 by passing through the space 26 between the wall 20 and baffle 25, while relatively clean air enters carburetor air intake 12 via tube 11. The air-entrained dirt passes out of chamber 17 into hose 15 as indicated by the arrow we have labeled C. The air and dirt is drawn out by the action of the venturi or vacuum developing device 16. Exhaust gases exit from the engine as shown by the arrow we have labeled E. As the gases pass through the tapered section 44 they draw the dust laden air from hose 15 as shown by the arrow we label D.

There is no question that the cleaner is operable and has achieved some degree of commercial success. However, it is our view that the appellants' claimed air cleaner¹ is an obvious variation of the following references:

Schutz 1,496,908 June 10, 1924

Altgelt 2,033,368 March 10, 1936

Société (French) 1,106,384 Dec. 19, 1955

The Altgelt reference is relied on to show a cap used on the intake of a

1 Claim 1 is typical of the three claims on appeal:

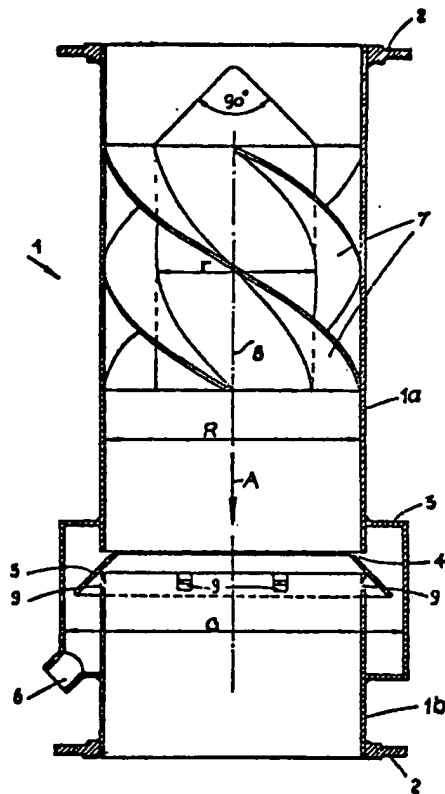
1. A self cleaning air cleaner device for removing foreign particles from air such as dust and dirt particularly suitable for internal combustion engines comprising a tank having cylindrical [sic] side walls constituting an air-swirling chamber having an upper air inlet end and a lower air outlet end, an air outlet tube leading through said tank lower end having an inner end located at a point above said tank lower end; said tube being concentrically disposed in said tank in spaced relationship to said tank side walls; a bottom closure plate between said tank and said

tractor air cleaner. The reference is used only in conjunction with the rejection of claim 2, the sole claim calling for a cap.

The major reference, Société, describes "fluid separators operating by centrifugal force," to be used particularly for the separation of moisture from steam. The detailed description will be by way of reference to the drawing therein:

tube supporting said tube relative to said tank; said tube having an outer end for attachment to the air intake of an air consuming device and an inner end for receiving air from said tank; a frusto-conical [sic] baffle plate on said tube adjacent said tube inner end and above said tank air outlet end; said baffle member having an outer peripheral edge in spaced relationship to said tank side walls; said baffle leading axially downwardly and radially outwardly from said tube; a center-block plate concentrically disposed within said tank adjacent its upper end preventing air flowing directly into the axial center area of said tank, vanes located between said plate and said tank side walls and disposed on an angle relative to the axis of said tank and overlapped relative to one another to prevent air traveling axially there-through and to cause the air traveling therebetween to define a spiral path; the cumulative cross-sectional area between said vanes being slightly more than the cross-sectional area of said tube; the spiral path of air traveling between vanes and said tube inner end developing centrifugal force in said air so that heavier particles move radially outwardly in their travel with the air so as to locate the particles adjacent said tank walls radially outwardly of said tube; the air entering the inner end of said tube leaving said tank, internal area spaced radially inwardly from the sidewalls of said tank so as to avoid the particles radially adjacent said tank sidewalls; the particles falling between said baffle plate and said tank walls; a bottom closure between said tube and said tank adjacent said tank lower end forming a particle chamber above said closure plate between said tank and tube below said baffle plate; a vent pipe leading through said tank wall to said chamber for particle evacuation, a hose connected to said vent pipe, and a vacuum developing mechanism connected to said hose; said mechanism drawing the particle laden radially outer air in said tank radially beyond said tube between said baffle and tank walls so as to draw off same thereby preventing it entering said tube for transfer to the air consuming device.

Claim 2 is dependent on claim 1 and additionally specifies the cap, while claim 3, similarly dependent on claim 1, details the vacuum developing mechanism.



The drawing shows a tubular separator section or "connection" 1 which is the same size as the steam line to which it is connected by employing flanges 2 at either end. Helical fins 7 are mounted within the tubular section. Moist gases or steam flow downwardly in the direction of arrow A, while the helical surfaces produce "a rotation of the gas or steam current." A larger annular casing 3 is spaced around a slot 4 and funnel-shaped surface 5 and together define a collection chamber. Société states:

*** The liquid droplets contained in the current thus precipitate on the helical surfaces and on the inner wall of the connection, then flow downward over the funnel-shaped surface of the circular slot into the annular casing, from which they may be extracted at any time. ***

*** The upper edge of funnel 5 penetrates into connection 1 only to the extent sufficient so that the fluid flowing from the inner wall of the connection and on helical surfaces 7 must be trapped by the funnel and diverted through circular slot 4 into casing 3. ***

A valve "or usual condensate extraction device" is provided at outlet 6 to tap off the moisture that has been separated.

Schutz is directed to a "suction air cleaner" used for "eliminating dust from the air before it enters the carburetors of internal combustion engines," and which is "non-clogging in operation." The suction air cleaner of Schutz clearly is a centrifugal type cleaner, the dust laden air being caused to "whirl with high velocity" by tangential inlet projections or fins and the engine suction. The dust is ejected at the bottom of a downward path by use of a venturi, while the clean air is directed upwardly to the engine intake by a conical baffle. As we view the rejection of the examiner and the decision of the board, the Schutz reference was used for two purposes. First, to show the exhaust driven "Venturi tube" or vacuum developing device, and second, to show the concept of such a venturi device in combination with an air cleaner as the means by which dust is ejected.

[1] Claims 1 and 3 were rejected by the examiner as "unpatentable over Société in view of Schutz," while claim 2 was so rejected "further in view of Altgelt," and the board affirmed. Since the differences in the claimed structure and that of the references are readily apparent, we take "unpatentable over" as meaning obvious within the meaning of 35 U.S.C. 103.

As will be apparent from their arguments discussed below, appellants seem to misconstrue the rejection. The differences in the separator portion of the structure claimed, as compared to that of Société, were deemed obvious by the examiner and the board, and we agree, while the combination of the separator portion with venturi and cap, and their use on internal combustion engines at normal air pressures are equally obvious to those in the art as shown by Schutz and Altgelt. With regard to the differences, the examiner and board are not combining the references by modifying the structure of Société by reference to structure shown in Altgelt or Schutz. With regard to the combination, it is evident that centrifugal separation operates on the differences in density between the carrier gas and the solid or liquid particles to be separated. The references thus cannot be said to be from non-analogous arts and thereby not combinable. We shall discuss these two aspects of the rejection separately below.

I. The Differences

Appellants' major contention concerning the differences in their structure as

compared to Société appears best summarized by the argument that:

The applicants deny that the Société patent may be combined with the Schutz patent as alleged by the Patent Office. The applicants contend that the modifications made by the Patent Office are based on the applicants' invention. Neither the Société patent nor the Schutz patent singly or in combination suggest their combination nor does either patent suggest taking the Société patent out of a steam pressure line and connecting two low pressure devices to one end and exposing the other end to atmospheric pressure. These charges [sic: changes?] by the Patent Office are certainly not *obvious* to one having *ordinary* skill in the art based on the Société and Schutz patents. Of course these charges [sic: changes?] are obvious in view of the applicants' invention. This [,] however, is improper and the applicants therefore object.

Appellants, in supporting that position, urge certain differences between their device described as a "tank" and the Société device which is termed a "tube." We take these differences as merely verbal.

Appellants also point to various internal structural modifications that must be made in Société in order to overcome the claimed differences. While we have considered all the arguments, we will discuss only the major ones here.

Appellants point to the fact that the claimed collection chamber is radially spaced inside the walls of the main air chamber while that of Société is outside. This difference is not convincing since Société discloses:

* * * The diameters of known fluid separators operating by centrifugal force are generally considerably greater than the diameter of the pipe through which gases or vapors actually flow. * * *

Further, appellants have pointed to no results traceable to this feature which would indicate that it is other than an obvious matter of design choice.

Much discussion has been had by appellants and the examiner about the effect of the claim limitation:

* * * the cumulative cross-sectional area between said vanes being slightly more than the cross sectional area of said tube; * * *

After careful analysis and discussion of flow paths, air pressure and velocity,

the examiner concluded that this limitation:

* * * is therefore not found to patentably distinguish since even if it is assumed to state dimensional relationship different from Société, it does not produce any different effect or result. * * *

The gist of appellants' response is that:

In fluid systems the relationships of size and the positions of baffles are critical. The Patent Office has not shown that they are not critical.

We fail to see how such a general allegation in a brief can rebut the relationships between flow paths, air pressure and velocity stated by the examiner to be the same herein as in Société. The examiner analyzed, with reference to the well-known Bernoulli principle,² the effect structural differences might have on the operation of appellants' device as compared to that of Société. Appellants do not challenge the statements as being incorrect, but assert that a reference by the examiner to the Bernoulli principle alone is not proper here. It was perhaps the best means available to the examiner of explaining the reasons for his conclusion of obviousness, and since unrebutted by factual evidence of any critical relationship in position or size, or of any difference in effect or result, we think the position of the examiner to be sound. Appellants have failed to show that the change in the vanes, the use of an inner rather than outer collection chamber and the use of a smaller output tube, for example, as compared to Société, result in a difference in function or give unexpected results. Such changes in design of the various features are no more than obvious variations consistent with the principles known in that art.

II. The Combination

We see little merit in the objections to the combination of Altgelt, as showing the cap, and Schutz, as showing the venturi tube, with Société. As the board noted:

* * * Inclusion of a cap over the air inlet is urged by the examiner to be no more than an additive feature of well known structure and purpose in such combinations as taught by Altgelt.

Although appellants contend the

² Bernoulli's principle is defined as: "Less pressure where the flow is faster." Rogers, *Physics for the Inquiring Mind*. Princeton Univ. Press (1960), p. 160.

board erred in stating: "Appellants have presented no arguments indicating that these features are of particular significance to the particular separator structure shown," the present arguments are not well taken in view of appellants' reply brief before the board which stated: "Admittedly the cap is shown in Altgelt and a suction [a venturi tube] shown in Schutz." Appellants now urge that:

* * * the cap necessitates that the air travels radially into the top of the tank and prevents air from directly axially entering the top of the tank.

As to the vacuum inducing device at the dirt outlet, the structure claimed is very efficient and not shown in the prior art.

That description of what the cap does describes precisely what the cap in the air cleaner of Altgelt does. Contrary to appellants' contention, the vacuum inducing device is shown in the prior art.

We grant that Schutz does use his venturi in an alternative fashion, i.e., the exhaust and dust laden air inputs are reversed. The examiner in his answer pointed this out but stated:

* * * Insofar as the operation of the aspirator is concerned it is immaterial which arrangement is used. All that is required is that the inlet for dirt laden gases be adjacent the throat (low pressure zone) of the venturi.

We agree, and also note that Schutz teaches his arrangement to be a six to ten-fold improvement over the suction available by the very arrangement which appellants use.

We are satisfied that the cap and venturi elements emphasized by appellants are obvious additions which are taught by the Schutz and Altgelt references to be useful as a matter of choice in the combination. No unexpected result stems from their use in the combination; the combination works as expected.

Our view of this controversy is not changed by the many variations in the argument that the structure is *novel*. In view of the above we *affirm* the decision of the Board of Appeals.

SMITH, Judge, concurs in the result.

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Court of Customs and Patent Appeals

PATTERSON AND LISSNER v. HAUCK

Appl. No. 7262 Decided Feb. 18, 1965

PATENTS

1. Specification—Sufficiency of disclosure (§ 62.7)

Patent Office Rule 71(b) is within 35 U.S.C. 112 which requires the inventor to set forth best mode of carrying out invention; it does not require that specification be filled with examples but that disclosure be measured by its adequacy to teach those skilled in the art how to practice invention without undue experimentation.

2. Interference—Evidence—Corroboration (§ 41.355)

Interference—Evidence—Reduction to practice (§ 41.361)

Actual reduction to practice is not proved by testimony and written records of one coinventor, standing alone, but is sufficiently corroborated where other evidence makes it appear that reduction actually took place at time shown by records; it is not required that corroborating testimony be offered concerning observation of acts constituting reduction; corroboration does not require that inventor have technically qualified observer at his side during every phase of completion of invention; thus, corroboration is sufficient where witness, inventor's superior, had told inventor to take specific known materials and work out better process of using them, which inventor did; process was carried out using exactly same resins and catalysts as had been in use; witness saw product of improved process and testified as to its characteristics.

3. Interference—Evidence—Corroboration (§ 41.355)

Even though letter transmitting to attorney a more detailed write-up of inventor's write-up describing invention was written and received a few days after opponent's date, as circumstantial evidence of when described process was reduced to practice and as final link in chain of evidence it is evident that test work on which write-up is based must have been done a considerable time prior to preparation by witness of detailed write-up.

4. Interference—Evidence—Corroboration (§ 41.355)

Interference—Evidence—Reduction to practice (§ 41.361)

Reduction to practice is shown although

Court of Appeals, Federal Circuit

In re Woodruff

No. 90-1095

Decided November 20, 1990

PATENTS

1. Patentability/Validity — Obviousness —
In general (§115.0901)JUDICIAL PRACTICE AND
PROCEDUREProcedure — Judicial review — Standard
of review — Patents (§410.4607.09)

Patent and Trademark Office's obviousness determination is reviewed de novo on appeal, while factual findings are reviewed under clearly erroneous standard.

PATENTS

2. Patentability/Validity — Obviousness —
Relevant prior art — Particular inventions
(§115.0903.03)Patentability/Validity — Obviousness —
Evidence of (§115.0906)

Claimed method of preserving refrigerated fruits and vegetables is obvious in view of prior art method for preventing deterioration of refrigerated vegetables, even though application discloses new benefit of fungal growth inhibition and slightly different range of carbon monoxide concentrations used in atmosphere in which fruits and vegetables are stored, since benefit of preventing fungal growth is at least generically encompassed within prior art's purpose of preventing deterioration of leafy and head vegetables, and since applicant's test results fail to establish that carbon monoxide concentration range claimed in application achieves unexpected results relative to prior art range and that claimed range is therefore critical to fungal growth inhibition.

Appeal from the U.S. Patent and Trademark Office, Board of Patent Appeals and Interferences.

Patent application of Richard E. Woodruff, serial no. 741,610 (method for inhibiting fungal growth on fresh fruits and vegetables). From decision of Board of Patent Appeals and Interferences upholding exam-

iner's rejection of claims 27-34, applicant appeals. Affirmed.

Patrick F. Bright, of Bright & Lorig, Los Angeles, Calif., for appellant.

Richard E. Schafer, associate solicitor (Fred E. McKelvey, solicitor, with him on brief), for appellee.

Before Rich and Plager, circuit judges, and Conti, senior district judge (Northern District of California, sitting by designation).

Rich, J.

Woodruff appeals from the September 7, 1989 decision of the Patent and Trademark Office (PTO) Board of Patent Appeals and Interferences (Board), Appeal No. 86-2814, affirming the rejection of claims 27-34 in Ser. No. 741,610 as unpatentable under 35 U.S.C. §103. We affirm.

BACKGROUND

Woodruff's patent application is entitled "Method for Inhibiting Fungal Growth on Refrigerated Fresh Fruits and Vegetables." It discloses that the growth of fungi on fresh fruits and vegetables can be greatly reduced by storing the vegetables in a specified modified atmosphere. This atmosphere differs from ordinary air primarily in the decrease in the amount of oxygen present and an increase in the amount of carbon monoxide.

Although claims 27-34 are appealed, we need consider only independent claims 27 and 31 since Woodruff does not here argue, nor did he argue to the Board, that the dependent claims are separately patentable. Claim 27 reads:

27. A process for inhibiting the growth of fungi on fresh leafy and head vegetables comprising maintaining said fresh leafy and head vegetables in modified gaseous atmosphere including carbon dioxide in an amount from 0 to about 20% by volume, molecular oxygen in an amount of about 1% to about 20% by volume, carbon monoxide in an amount of about 3% to about 25% by volume, with the remainder being substantially all molecular nitrogen, for a time sufficient to inhibit the visible growth of fungi on said fresh leafy and head vegetables, and at a temperature in the range of about 29° F. to about 60° F.

Independent claim 31 differs from claim 27 only in stating the carbon monoxide limitation to be "in an amount of more than 5% to about 25% by volume."

The sole reference relied upon by the Board in rejecting the appealed claims is U.S. Patent No. 3,453,119 to McGill (McGill patent) which is directed to a method of storing fresh leafy and head vegetables (such as lettuce) in order to "maintain their fresh appearance ... even over extended periods of time." The disclosure indicates that the method retards "deterioration changes on storage including respiratory deterioration changes, bacterial deterioration changes and other enzymatic deterioration changes." Like Woodruff's method, McGill's method consists of storing the vegetables in a modified atmosphere and at a lower temperature. The following is a comparison of the atmospheres and temperatures claimed in Woodruff's application and those disclosed in McGill (in approximate percent by volume).

Woodruff Claim 27	Woodruff Claim 31	McGill Patent
0-20% CO ₂	0-20% CO ₂	0-5% CO ₂
1-20% O ₂	1-20% O ₂	1-10% O ₂
3-25% CO	>5-25% CO	1-5% CO
balance N ₂	balance N ₂	balance N ₂
29-60° F	29-60° F	32-40° F

As can be seen, except for the carbon monoxide concentration, all of the ranges of gas concentrations and temperature set forth in the McGill patent are completely within those recited in claims 27 and 31. With respect to the CO concentration, there is an overlap between the percentages of the McGill patent and claim 27, while the percentages of the McGill patent and claim 31 are roughly contiguous.

Woodruff presented a number of declarations to the PTO in support of his contention that the claims are not rendered obvious by the McGill patent. A declaration by reference-patentee Dr. John N. McGill states that his patent does not teach that fungi are a problem in leafy and head vegetables. Dr. McGill further states that at the time he was doing the research which formed the basis of the McGill patent, he was concerned only with bacteria control and the prevention of "butt-end discoloration" of lettuce, and made no observations as to the growth or lack of growth of fungi on lettuce. This latter contention is supported by selected pages from Dr. McGill's assistant's laboratory notebook. Dr. McGill's declaration also states that, in his opinion as an expert in the field, "processes that control bacteria and slime in leafy head vegetables do not neces-

sarily control fungi and vice-versa," and that the McGill patent "does not teach or suggest to one of ordinary skill in the relevant art how to control fungi in leafy and head vegetables." Dr. McGill's declaration is corroborated by Dr. John H. Silliker, another expert in the art, and by Mr. James R. Lugg, the president of TransFRESH Corporation.¹

Woodruff also presented the declaration of Mr. Laurence D. Bell, another TransFRESH employee. Mr. Bell conducted tests comparing the fungi-inhibiting qualities of processes within the scope of claims 27 and 31 with the commercial embodiment of McGill's method used by TransFRESH. According to this declaration, TransFRESH employs a method of storing fresh vegetables wherein the initial concentration of carbon monoxide is about 4.5%, but is allowed to diminish significantly over the first few days of storage. The declaration shows that for 7 and 14 day test periods, the methods within the scope of claims 27 and 31 were much better at preventing fungal growth than was the commercial embodiment of McGill's method.

In affirming the rejection of claims 27-34 under 35 U.S.C. §103, the Board focussed on the teaching in the McGill patent of "inhibiting deterioration generally," noting that it was well-known in the art that fungi cause deterioration in leafy vegetables such as lettuce. The Board also relied heavily on a statement in the McGill patent that leafy vegetables may be stored in the disclosed modified atmosphere "for as much as 14 days without substantial loss in appearance," noting that fungal growth would certainly have an adverse impact on the appearance of leafy vegetables. Finally, the Board considered each of the declarations submitted by Woodruff, but concluded that these were insufficient to overcome the rejection.

OPINION

[1] At the outset, we note that we review an obviousness determination by the PTO *de novo*, *In re De Blauwe*, 736 F.2d 699, 703, 222 USPQ 191, 195 (Fed. Cir. 1984), while our review of factual findings is under the clearly erroneous standard. *In re Caveney*, 761 F.2d 671, 674, 226 USPQ 1, 3 (Fed. Cir. 1985).

We first look to determine the differences between the claimed invention and the prior

¹ TransFRESH Corp. is the assignee of both Woodruff's application and of the now-expired McGill patent.

art. Claims 27 and 31 are process claims comprising the single step of maintaining vegetables in a specified atmosphere for a specified time (a time sufficient to inhibit the visible growth of fungi).

The atmospheres recited in claims 27 and 31 are anticipated by the atmosphere taught in the McGill patent except for the overlapping or adjacent ranges of carbon monoxide concentration. Woodruff argues, with respect to claim 31, that there is not simply an *overlap* in ranges, but a *difference* in ranges, since the McGill patent teaches a maximum CO concentration of 5%, while claim 31 requires a CO concentration of "more than 5%." We agree, however, with the Board that the disclosure in the McGill patent of a carbon monoxide concentration of "about 1-5%" does allow for concentrations slightly above 5%.

The actual time limitation of claims 27 and 31 is also met by McGill's disclosure. Claims 27 and 31 state that the vegetables should be maintained in the modified atmosphere "for a time sufficient to inhibit the visible growth of fungi." According to the examples given in Woodruff's specification, the time required to show whether or not there has been an inhibition of fungi on leafy and head vegetables is on the order of 6-19 days. As the Board found, the McGill patent discloses storing the vegetables in the modified atmosphere for 14 days "without substantial loss in appearance." Thus, the time taught by the McGill patent for storing vegetables in a modified atmosphere is within the range which Woodruff's disclosure indicates is "sufficient to inhibit the visible growth of fungi," or at least demonstrate inhibition.

Woodruff, however, maintains that the above language ("time sufficient to inhibit the visible growth of fungi") is not only a time limitation but is also a *purpose* limitation, i.e., the claim requires that one be intending to inhibit fungal growth when performing the claimed method step. Since, argues Woodruff, the prior art did not recognize the fungi-inhibiting property of Woodruff's method, the prior art could not render obvious a method having the purpose of inhibiting fungal growth.

[2] Judging from the evidence before us, Woodruff may have been the first to recognize the fungal-inhibiting benefit of the method. On the other hand, we do not agree that what Woodruff has allegedly discovered and claimed can be termed a new *purpose* for performing the claimed method. The generic purpose of the method disclosed in McGill is to prevent the *deterioration* of fresh vegetables, which certainly encompasses the specific benefit disclosed by

Woodruff. While the McGill patent refers only to the effectiveness of the method against respiratory, bacterial, and enzymatic deterioration, Woodruff's disclosure that the method is *also* effective against fungi relates to but one other known cause of deterioration.

Therefore, there are two differences between the claimed invention and the prior art: one, the slightly different ranges of carbon monoxide concentration used in the modified atmosphere; and two, the newly disclosed *benefit* of inhibiting the growth of fungi. We are of the opinion that these differences do not render the claimed process patentable.

It is a general rule that merely discovering and claiming a new benefit of an *old* process cannot render the process again patentable. *Verdegaal Bros., Inc. v. Union Oil Co. of Calif.*, 814 F.2d 628, 632-33, 2 USPQ2d 1051, 1054 (Fed. Cir.), *cert. denied*, 484 U.S. 827 (1987); *Bird Provision Co. v. Owens Country Sausage, Inc.*, 568 F.2d 369, 375, 197 USPQ 134, 139 (5th Cir. 1978). While the processes encompassed by the claims are not entirely *old*, the rule is applicable here to the extent that the claims and the prior art overlap.

The cases of *In re Shetty*, 566 F.2d 81, 195 USPQ 753 (CCPA 1977) and *In re Marshall*, 578 F.2d 301, 198 USPQ 344 (CCPA 1978) do not, as urged by Woodruff, compel a contrary result. In both of these cases, the applicant had discovered a completely new use for either an old compound (*Marshall*) or an obvious compound (*Shetty*). In the present case, what Woodruff terms a "new use" (preventing fungal growth) is at least generically encompassed by the prior art purpose of preventing the deterioration of leafy and head vegetables.

Nor can patentability be found in the difference in carbon monoxide ranges recited in the claims. The law is replete with cases in which the difference between the claimed invention and the prior art is some range or other variable within the claims. See, e.g., *Gardner v. TEC Sys., Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir.), *cert. denied*, 469 U.S. 830 [225 USPQ 232] (1984); *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980); *In re Ornitz*, 351 F.2d 1013, 147 USPQ 283 (CCPA 1965); *In re Aller*, 220 F.2d 454, 105 USPQ 233 (CCPA 1955). These cases have consistently held that in such a situation, the applicant must show that the particular range is *critical*, generally by showing that the claimed range achieves unexpected results relative to the prior art range. *Gardner*, 725 F.2d at 1349, 220 USPQ at 786 (obviousness determina-

tion affirmed because dimensional limitations in claims did not specify a device which performed and operated differently from the prior art); *Boesch*, 617 F.2d at 276, 205 USPQ at 219; *Ornitz*, 351 F.2d at 1016-17, 147 USPQ at 286; *Aller*, 220 F.2d at 456, 105 USPQ at 235. Woodruff has made no such showing in the present case. The only test results presented by Woodruff are the results reported by Mr. Bell, comparing Woodruff's claimed invention to the commercial embodiment of McGill's method. While Woodruff's invention certainly showed superior fungi-inhibiting effect in these tests, the critical comparison is not with the commercial embodiment of McGill's invention, but with the method taught in his patent. According to Mr. Bell's declaration, the carbon monoxide concentration in the test group representing the commercial embodiment of McGill's invention was allowed to drop to 0% after 4 days. The McGill patent does not teach allowing the concentrations of any of the gases to fall out of the suggested ranges.

CONCLUSION

In the absence of adequate evidence showing that ranges of carbon monoxide concentration recited in claims 27-34 are critical, the Board correctly affirmed the rejection of the claims under 35 U.S.C. §103.

AFFIRMED

District Court, N.D. Texas

Minturn Advertising Inc. v. Hermesen Design Associates Inc.

No. CA3-87-2606-D

Decided January 5, 1990

TRADEMARKS AND UNFAIR TRADE PRACTICES

1. Infringement; conflicts between marks — Likelihood of confusion — Particular marks — Confusion not likely (§335.0304.05)

Defendant's mark, consisting of letter "H" superimposed on Universal Product Code symbol, is not likely to be confused with plaintiff's "M," also superimposed on UPC symbol, even though both marks are for package design services, since plaintiff's mark is weak, since marks make dissimilar impressions and, when viewed in totality, are quite different, since format of parties' mail

advertising is quite different, and since consumers of parties' services are quite sophisticated.

Action by Minturn Advertising Inc. against Hermesen Design Associates Inc., for trademark infringement. Judgment for defendant.

David H. Judson, of Hughes & Luce, Dallas, Texas, for plaintiff.

Richard L. Schwartz, of Glaser, Griggs & Schwartz, Dallas, for defendant.

Fitzwater, J.

This lawsuit raises only one issue — whether the service mark adopted by defendant Hermesen Design Associates, Inc. ("Hermesen") is so similar to the mark adopted by plaintiff Minturn Advertising, Inc. ("Minturn") as to cause confusion in the minds of prospective customers. Because the court concludes the marks are not so similar that potential customers are likely to be confused, the court denies the permanent injunction Minturn requests.

I

This is a trial on stipulated facts and affidavit evidence. By an agreed order dated May 11, 1989, Minturn and Hermesen stipulated that the only triable issue in this case related to Minturn's claim of infringement and Hermesen's claim of non-infringement. The parties agreed to stipulate to the underlying historical facts and submitted their remaining evidence by affidavit. From the stipulation and affidavits, the court finds the facts to be as follows.¹

Minturn is an advertising agency with its principal place of business in Kansas. Minturn has provided advertising agency services since approximately 1983. It initially operated in Missouri, Nebraska, Iowa, and Oklahoma but began promoting its services in other parts of the United States, including Texas, in 1985. Hermesen is a corporation engaged in package design with its principal place of business in Texas. It has provided these services since late 1981. Hermesen promotes its services primarily in Texas.

¹ The court sets forth in this memorandum opinion its findings of fact and conclusions of law. See Fed.R.Civ.P. 52(a).